

FIG.1

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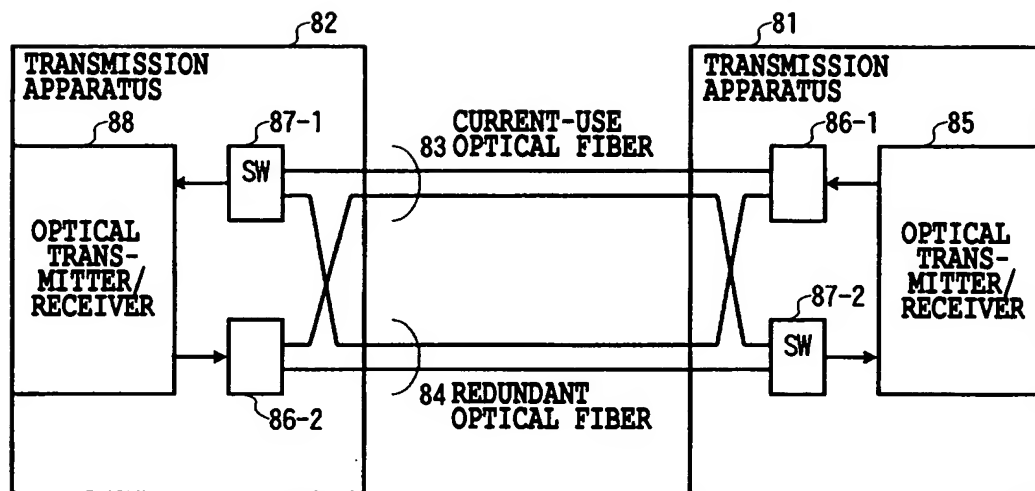


FIG.2

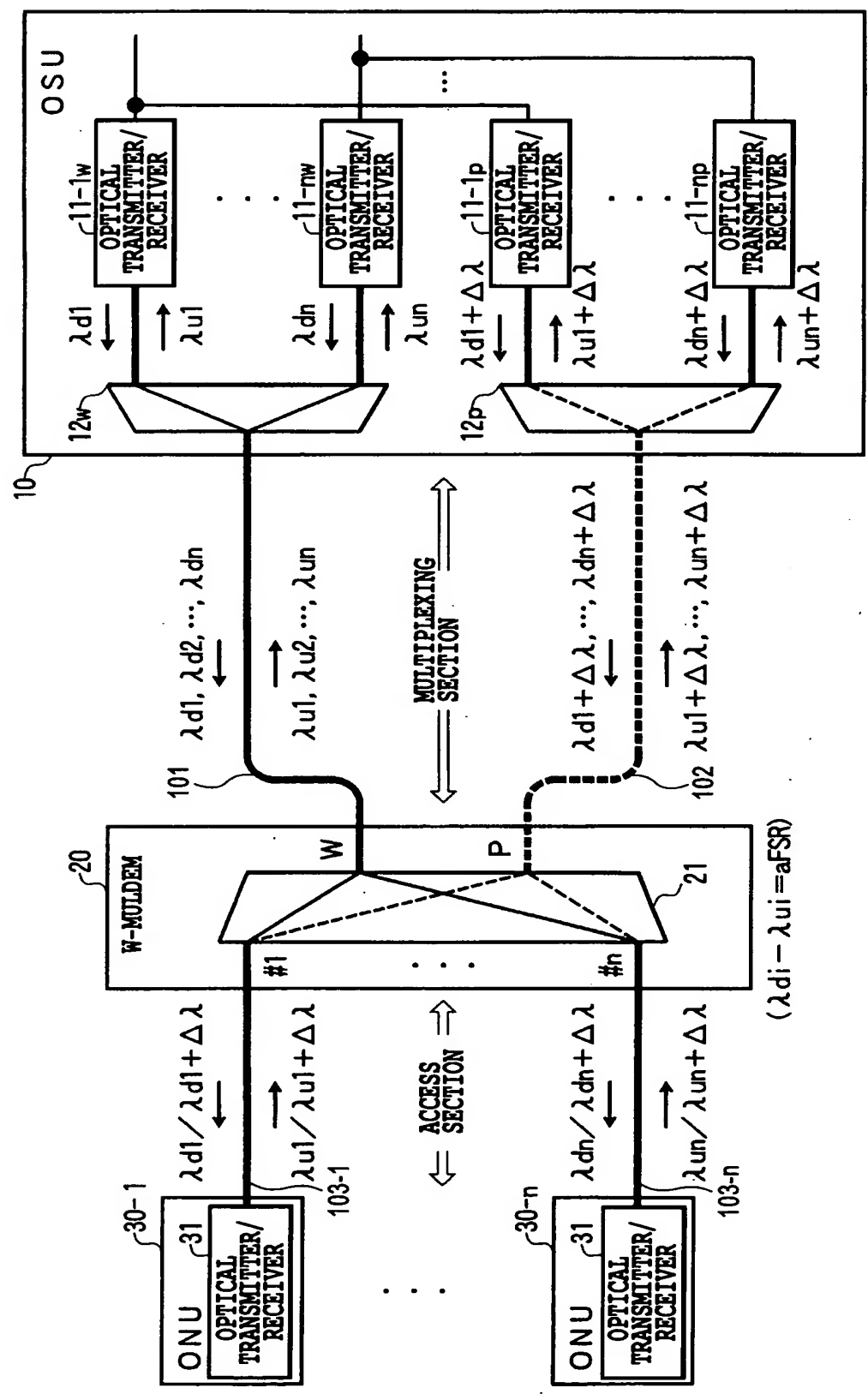


FIG.3

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	W	P
ONU30-1 #1	$\lambda_{d1}$ $\lambda_{u1}$	$\lambda_{d1} + \Delta\lambda (+mFSR)$ $\lambda_{u1} + \Delta\lambda (+mFSR)$
ONU30-2 #2	$\lambda_{d2}$ $\lambda_{u2}$	$\lambda_{d2} + \Delta\lambda (+mFSR)$ $\lambda_{u2} + \Delta\lambda (+mFSR)$
$\vdots$	$\vdots$	$\vdots$
ONU30-n-1 #n-1	$\lambda_{dn-1}$ $\lambda_{un-1}$	$\lambda_{dn-1} + \Delta\lambda (+mFSR)$ $\lambda_{un-1} + \Delta\lambda (+mFSR)$
ONU30-n #n	$\lambda_{dn}$ $\lambda_{un}$	$\lambda_{dn} + \Delta\lambda (+mFSR)$ $\lambda_{un} + \Delta\lambda (+mFSR)$

$$\lambda_{di} - \lambda_{ui} = aFSR$$

FIG.4A

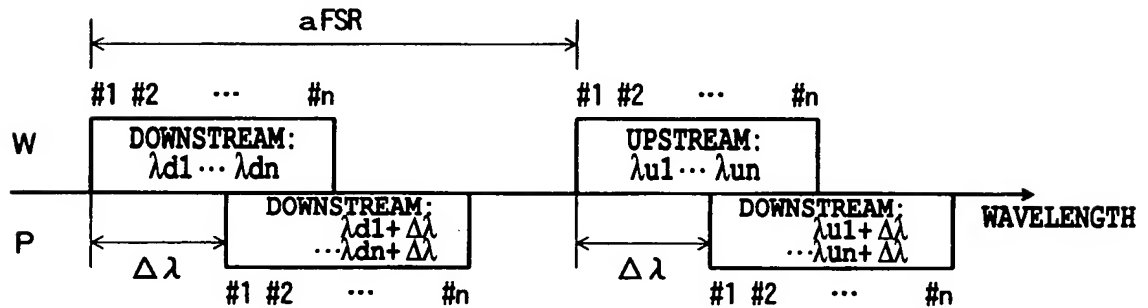


FIG.4B

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	W	P
ONU30-1 # 1	$\lambda_{d1}$ $\lambda_{u1}$	$\lambda_{d2}$ $\lambda_{u2}$
ONU30-2 # 2	$\lambda_{d2}$ $\lambda_{u2}$	$\lambda_{d3}$ $\lambda_{u3}$
$\vdots$	$\vdots$	$\vdots$
ONU30-n-1 #n-1	$\lambda_{dn-1}$ $\lambda_{un-1}$	$\lambda_{dn}$ $\lambda_{un}$
ONU30-n # n	$\lambda_{dn}$ $\lambda_{un}$	$\lambda_{dn+1}(\lambda_{d1})$ $\lambda_{un+1}(\lambda_{u1})$

$$\Delta\lambda = \lambda_{di+1} - \lambda_{di} = \lambda_{ui+1} - \lambda_{ui}$$

$$(\lambda_{dn+1} = \lambda_{d1} + \text{FSR}, \lambda_{un+1} = \lambda_{u1} + \text{FSR})$$

FIG.5A

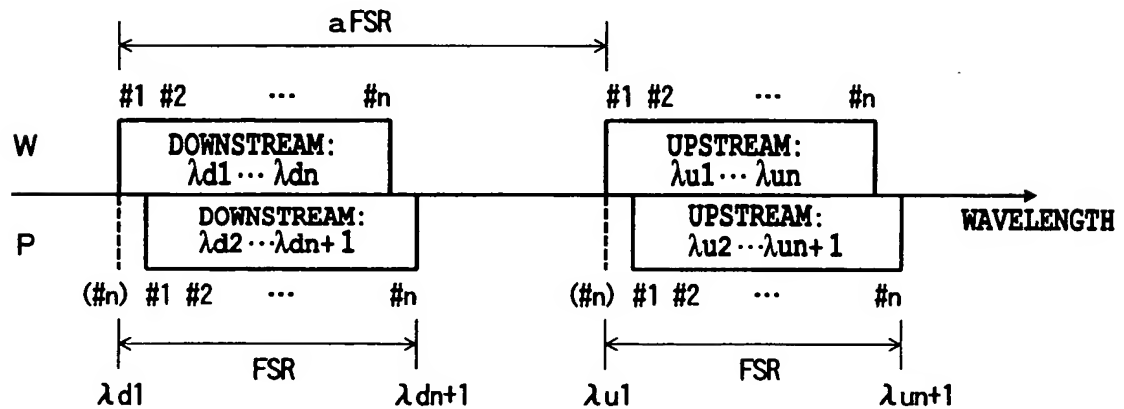


FIG.5B



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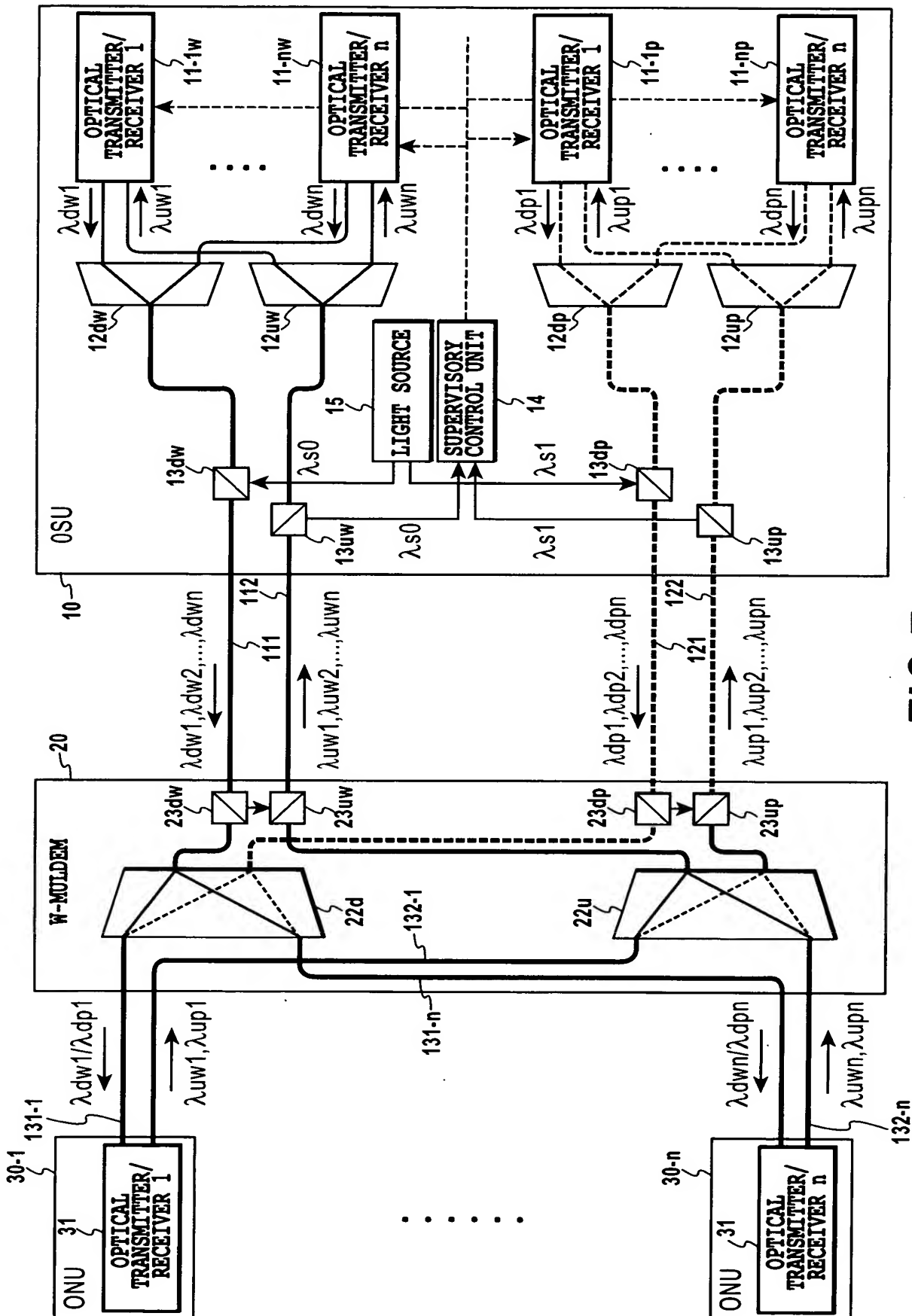


FIG. 7

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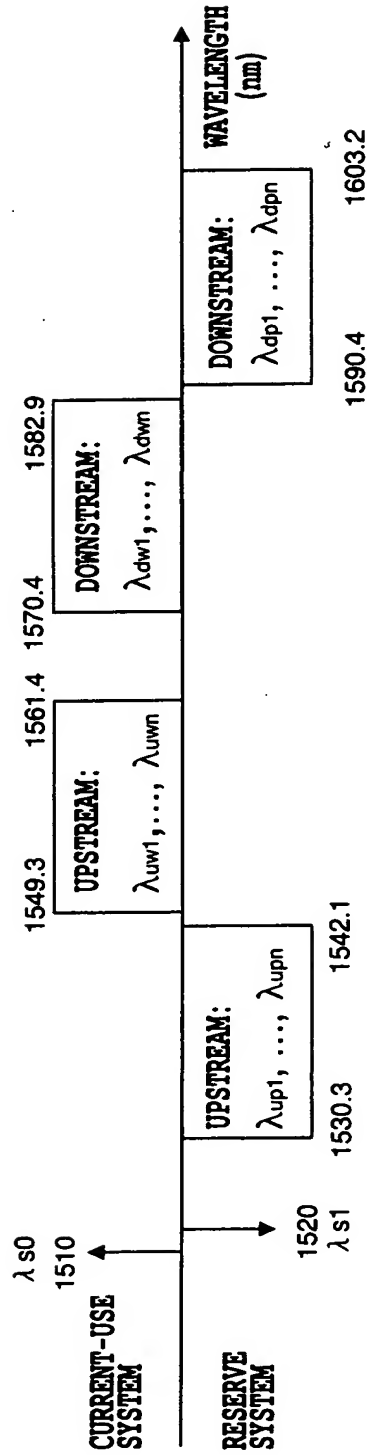


FIG. 8A

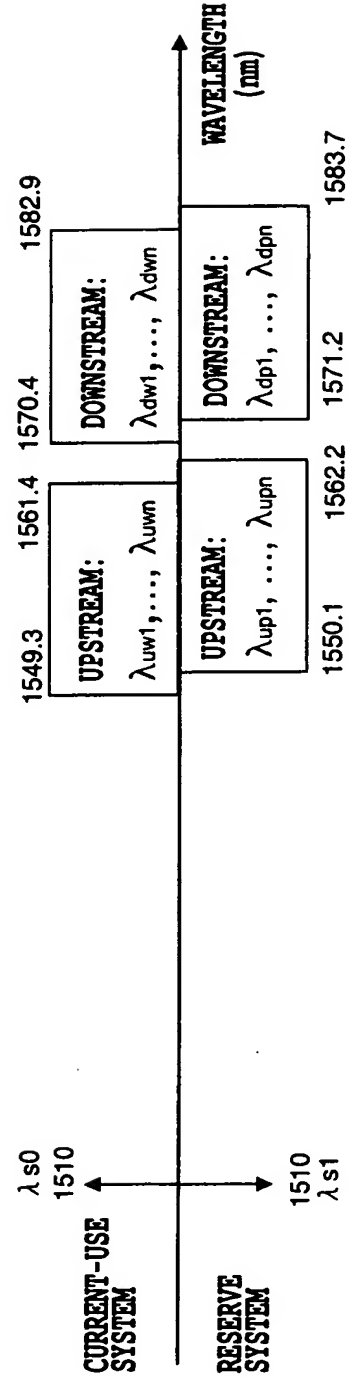


FIG. 8B



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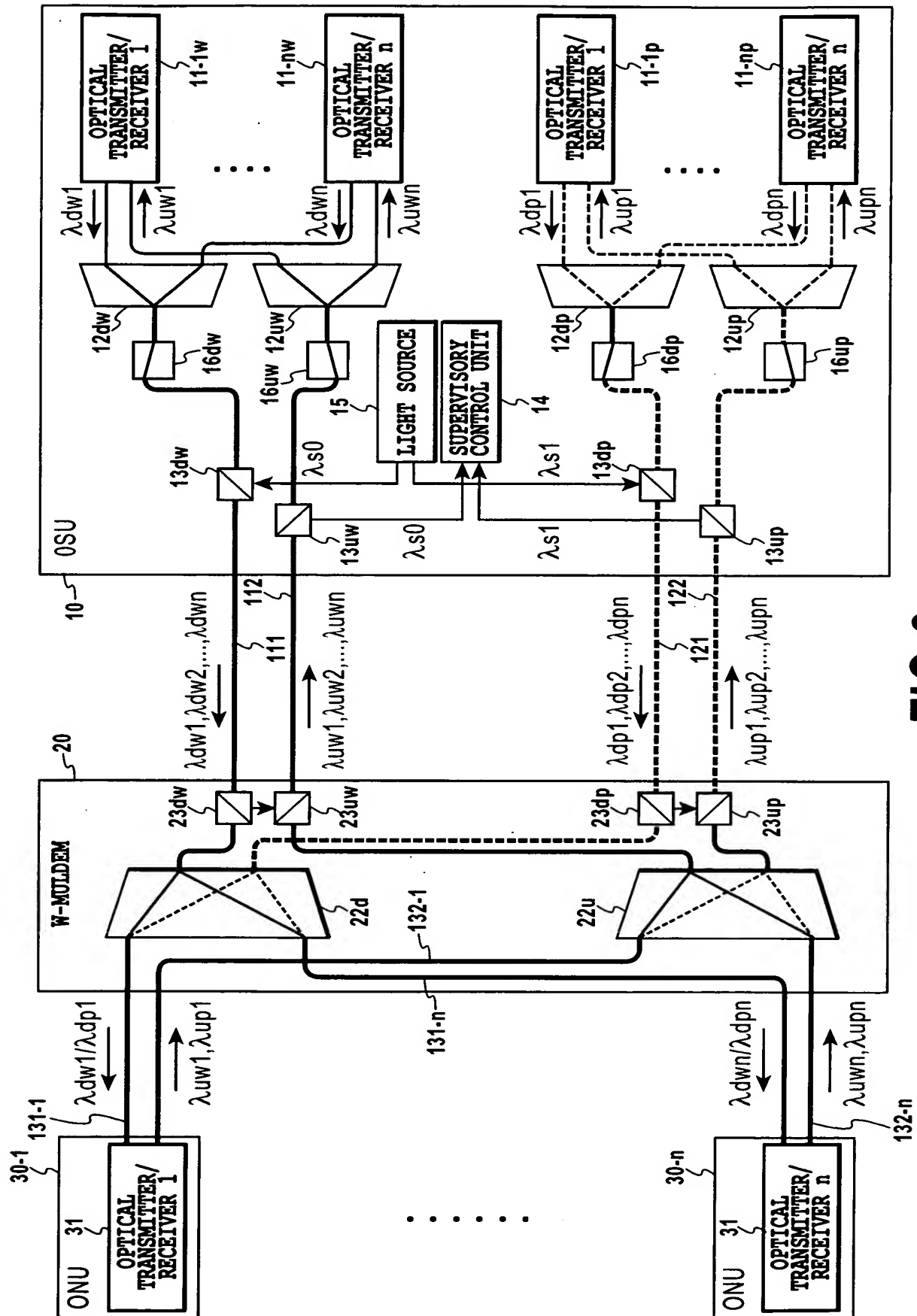
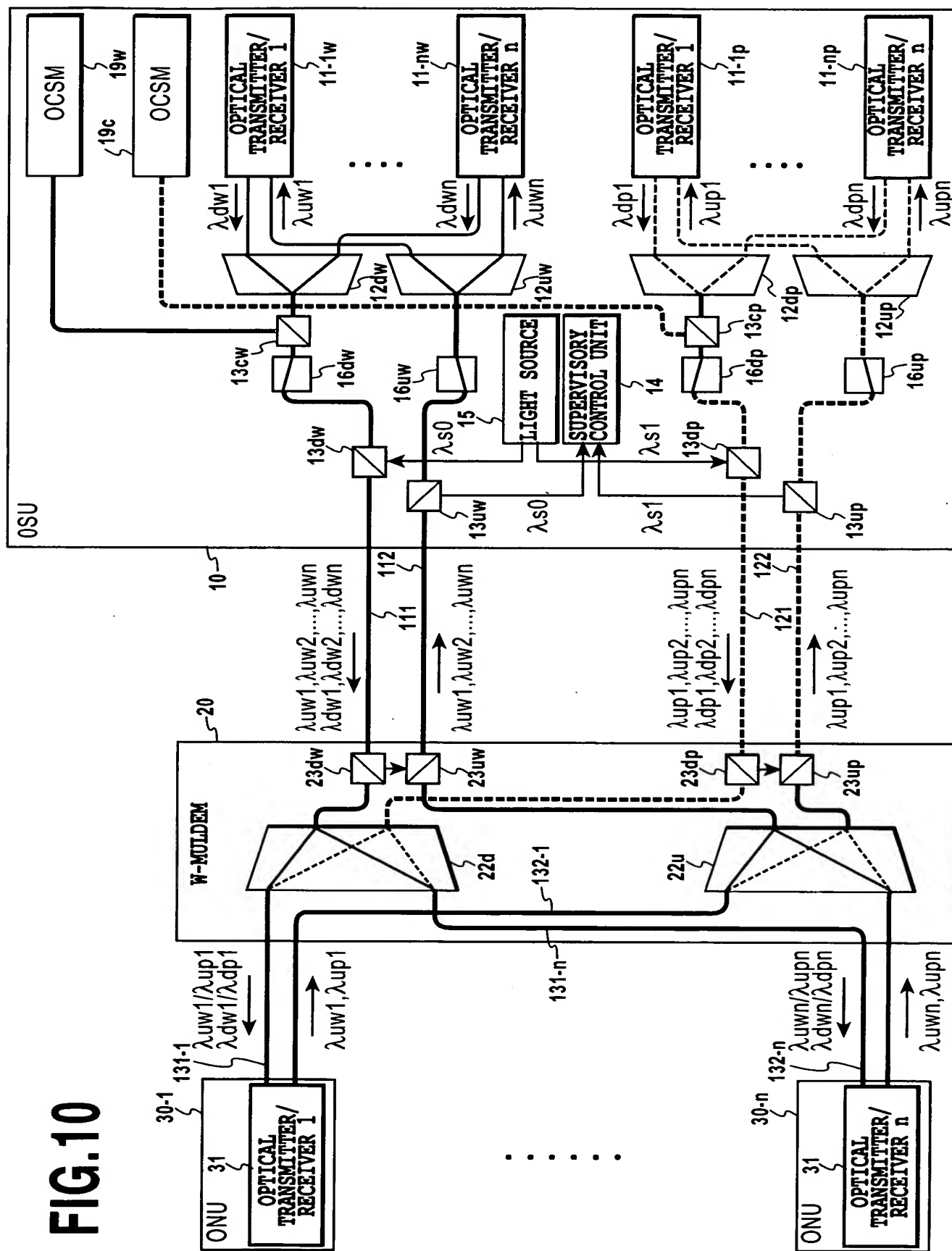


FIG. 9

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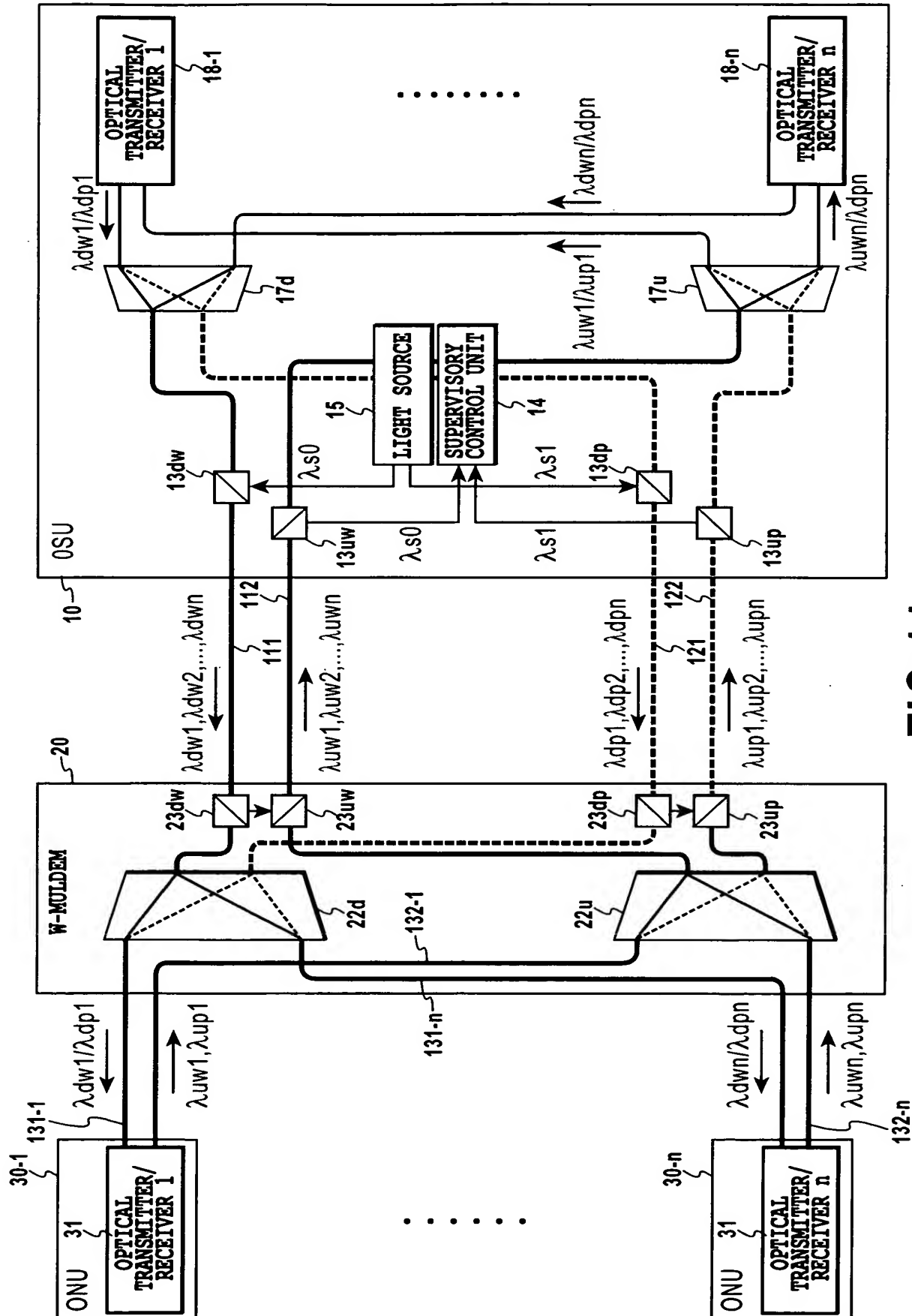
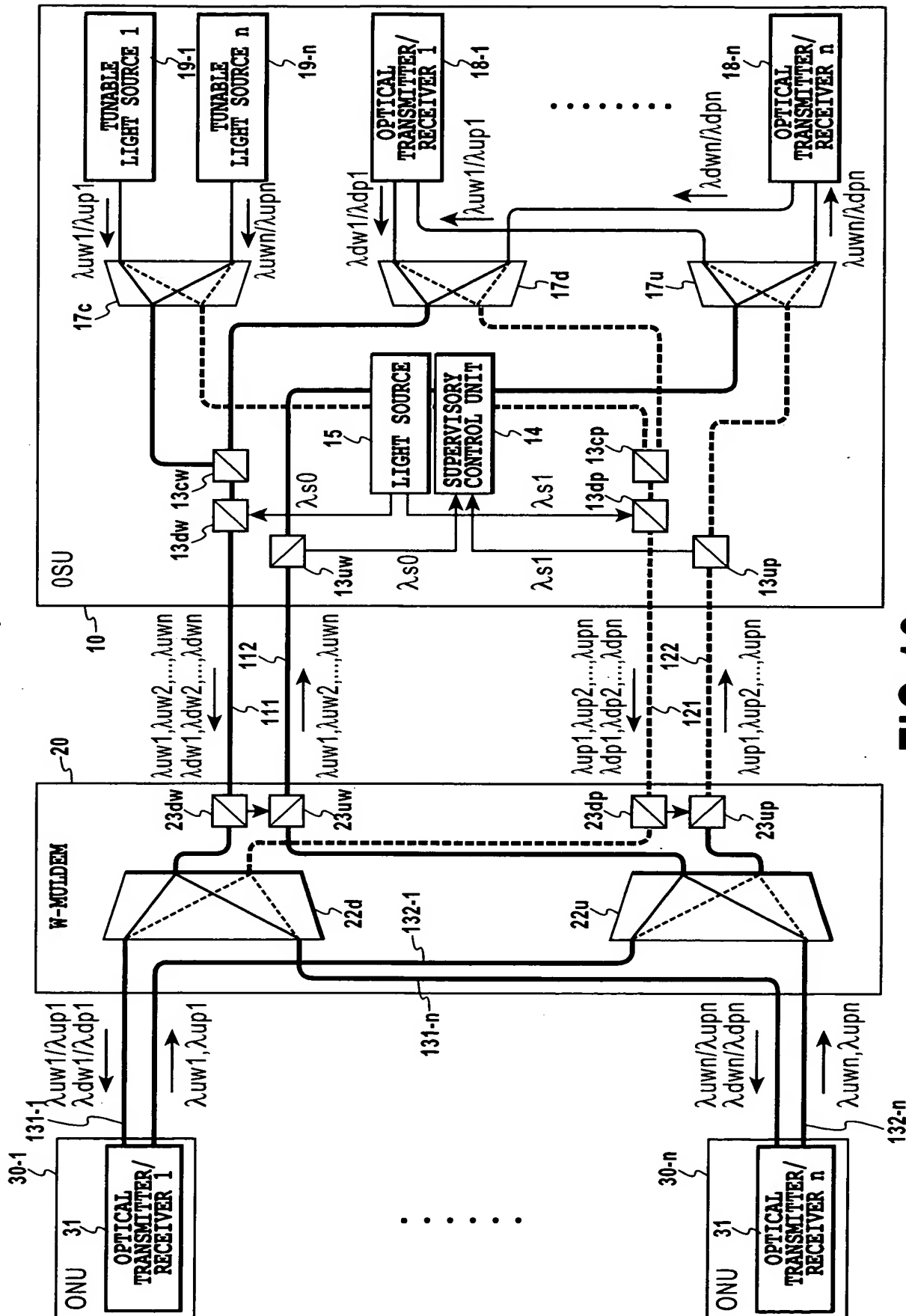


FIG. 11

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**FIG. 12**

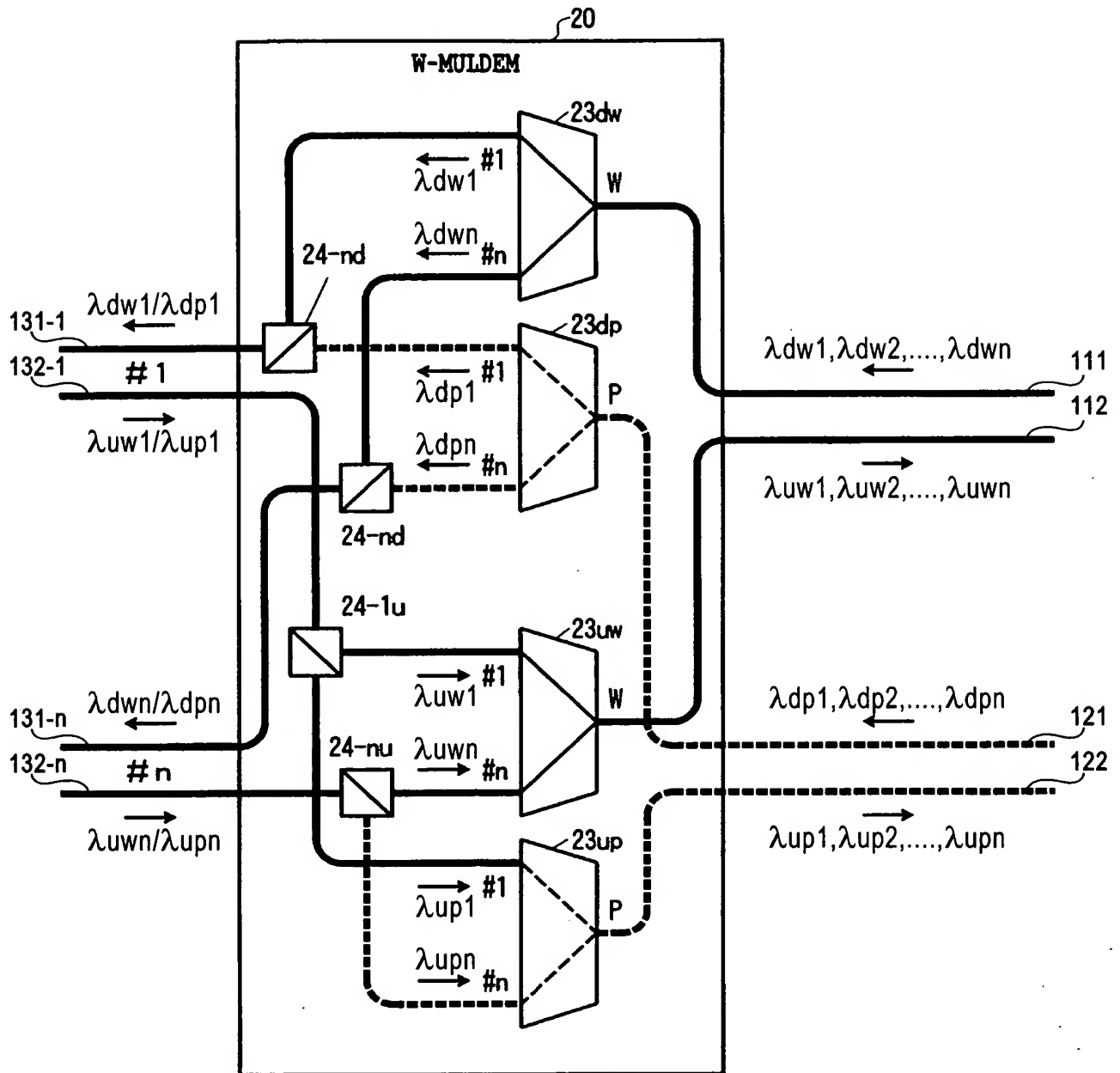


FIG.13

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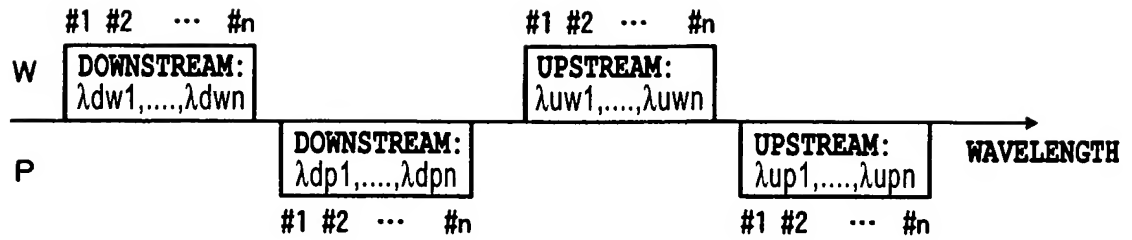


FIG.14A

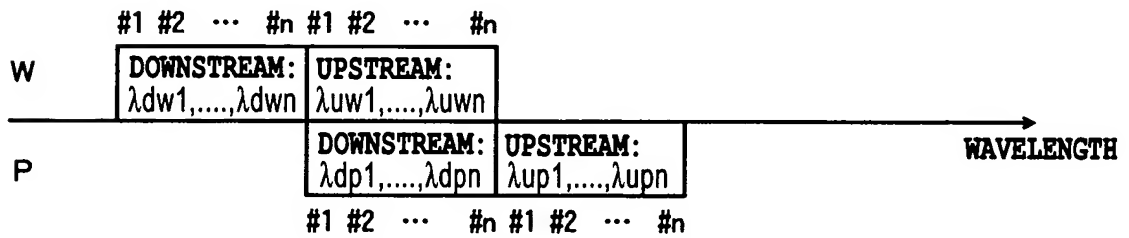


FIG.14B

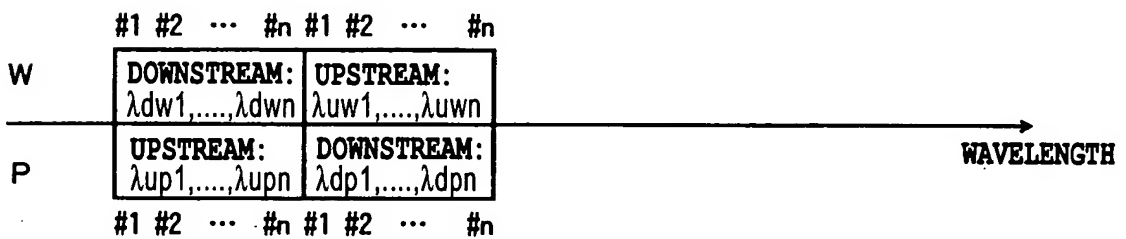


FIG.14C

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	W	P
ONU1	$\lambda_{d1}$ $\lambda_{u1}$	$\lambda_{d33}$ $\lambda_{u33}$
ONU2	$\lambda_{d2}$ $\lambda_{u2}$	$\lambda_{d34}$ $\lambda_{u34}$
$\vdots$	$\vdots$	$\vdots$
ONU32	$\lambda_{d32}$ $\lambda_{u32}$	$\lambda_{d64}$ $\lambda_{u64}$
ONU33	$\lambda_{d33}$ $\lambda_{u33}$	$\lambda_{d1}$ $\lambda_{u1}$
ONU34	$\lambda_{d34}$ $\lambda_{u34}$	$\lambda_{d2}$ $\lambda_{u2}$
$\vdots$	$\vdots$	$\vdots$
ONU64	$\lambda_{d64}$ $\lambda_{u64}$	$\lambda_{d32}$ $\lambda_{u32}$

FIG.15A

	#1 #2 ... #k #k+1 ... #n	#1 #2 ... #k #k+1 ... #n	
W	DOWNSTREAM: $\lambda_{d1} \dots \lambda_{dk}$	$\lambda_{dk+1} \dots \lambda_{dn}$	UPSTREAM: $\lambda_{u1} \dots \lambda_{uk}$
			$\lambda_{uk+1} \dots \lambda_{un}$
P	DOWNSTREAM: $\lambda_{d1} \dots \lambda_{dk}$	$\lambda_{dk+1} \dots \lambda_{dn}$	UPSTREAM: $\lambda_{u1} \dots \lambda_{uk}$
			$\lambda_{uk+1} \dots \lambda_{un}$
	#k+1 ... #n	#1 #2 ... #n	#k+1 ... #n

WAVELENGTH  $\rightarrow$

FIG.15B

	#1 #2 ... #k #k+1 ... #n	
W	DOWNSTREAM: $\lambda_{d1} \dots \lambda_{dk}$	$\lambda_{dk+1} \dots \lambda_{dn}$
	UPSTREAM: $\lambda_{u1} \dots \lambda_{uk}$	$\lambda_{uk+1} \dots \lambda_{un}$
P	DOWNSTREAM: $\lambda_{d1} \dots \lambda_{dk}$	$\lambda_{dk+1} \dots \lambda_{dn}$
	UPSTREAM: $\lambda_{u1} \dots \lambda_{uk}$	$\lambda_{uk+1} \dots \lambda_{un}$
	#k+1 ... #n	#1 #2 ... #k

WAVELENGTH  $\rightarrow$

FIG.15C

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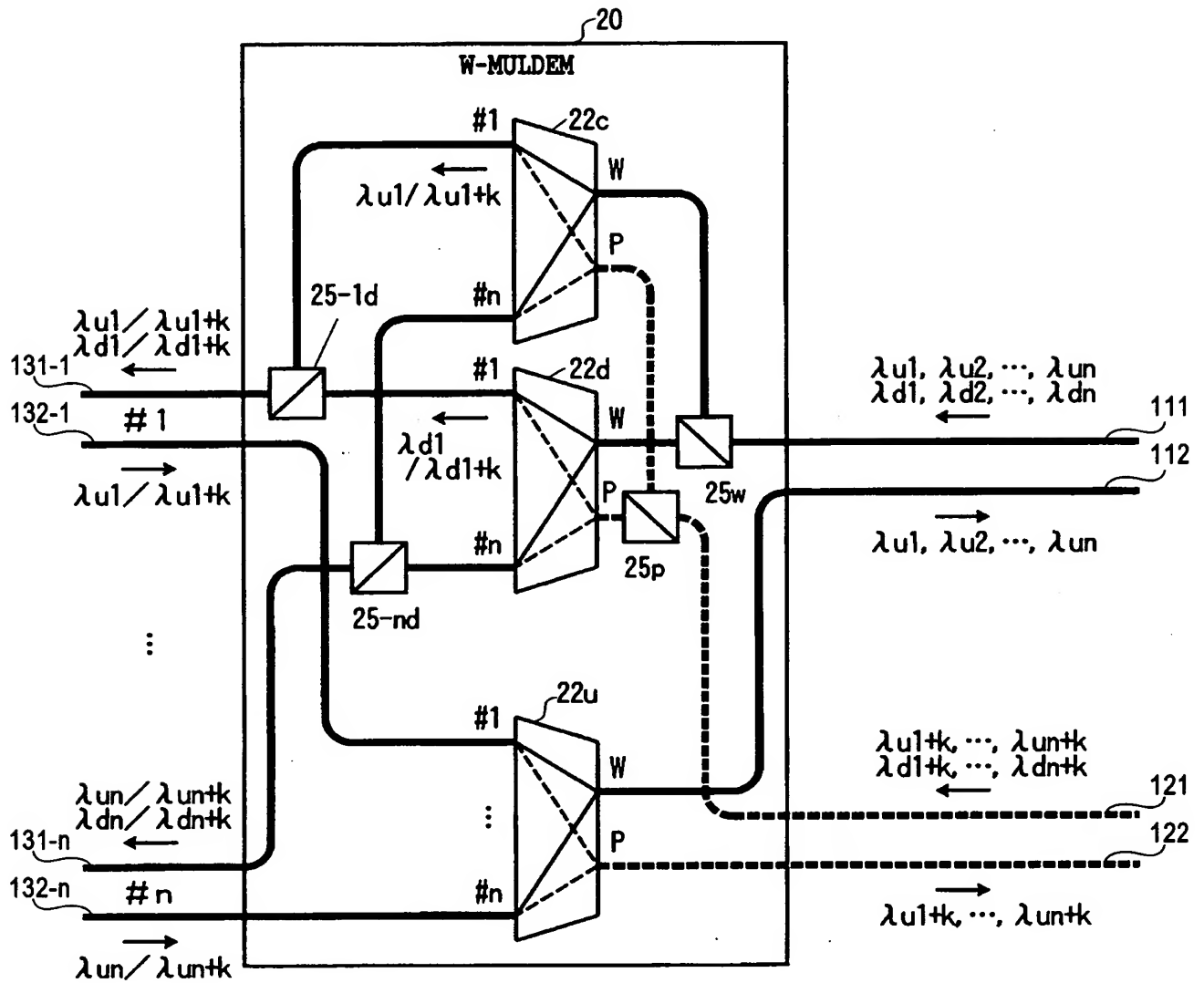


FIG.16



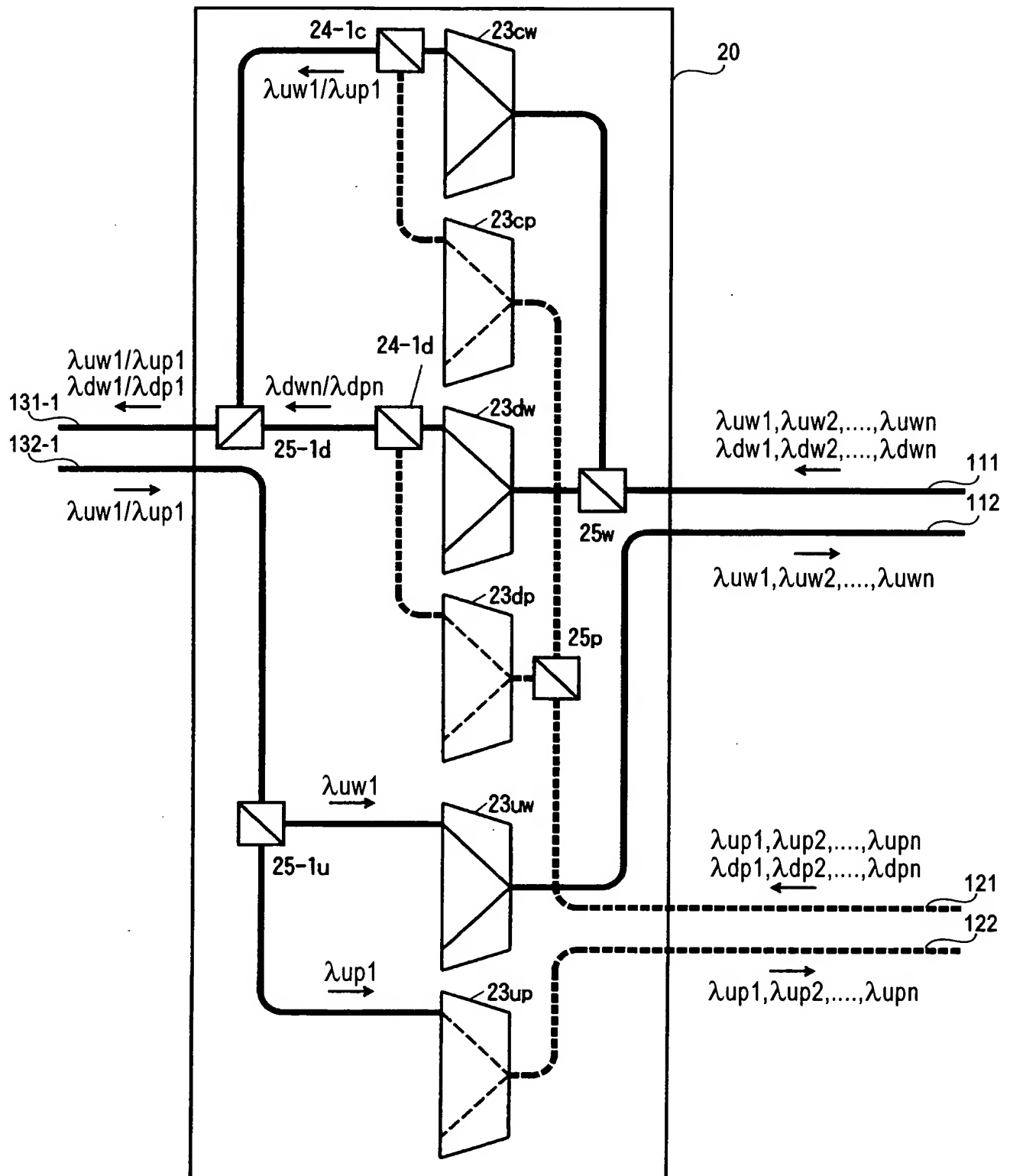


FIG.17

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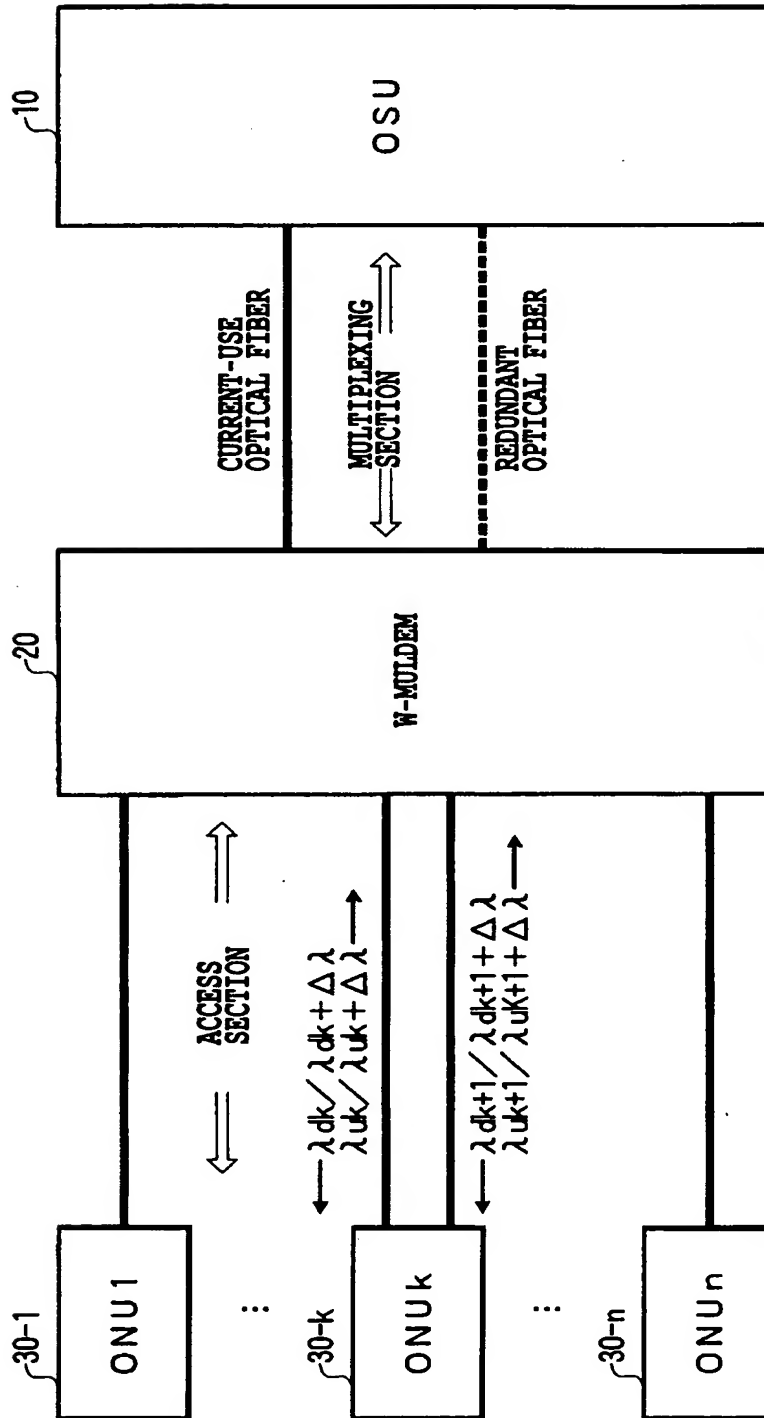


FIG.18

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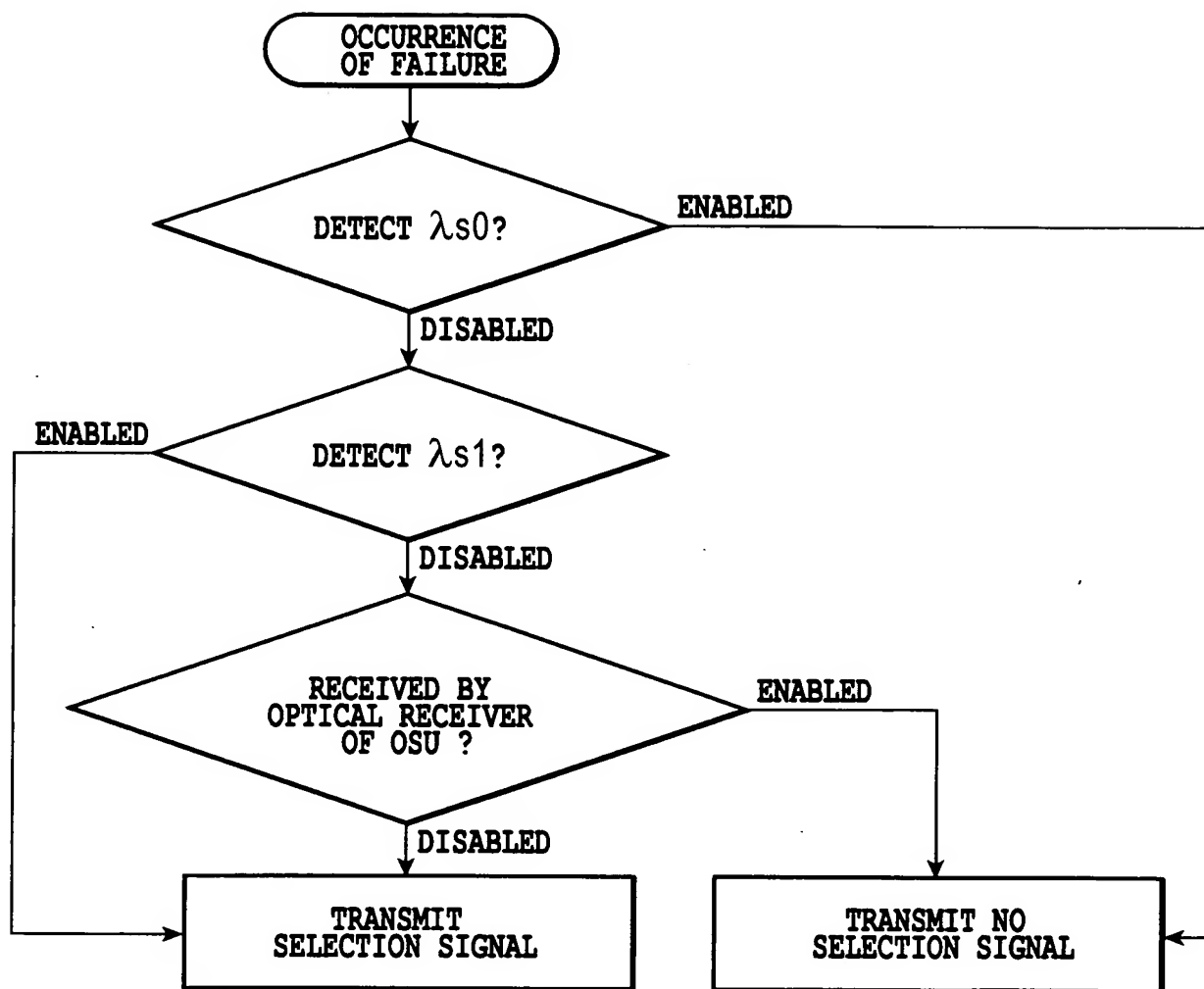


FIG.20

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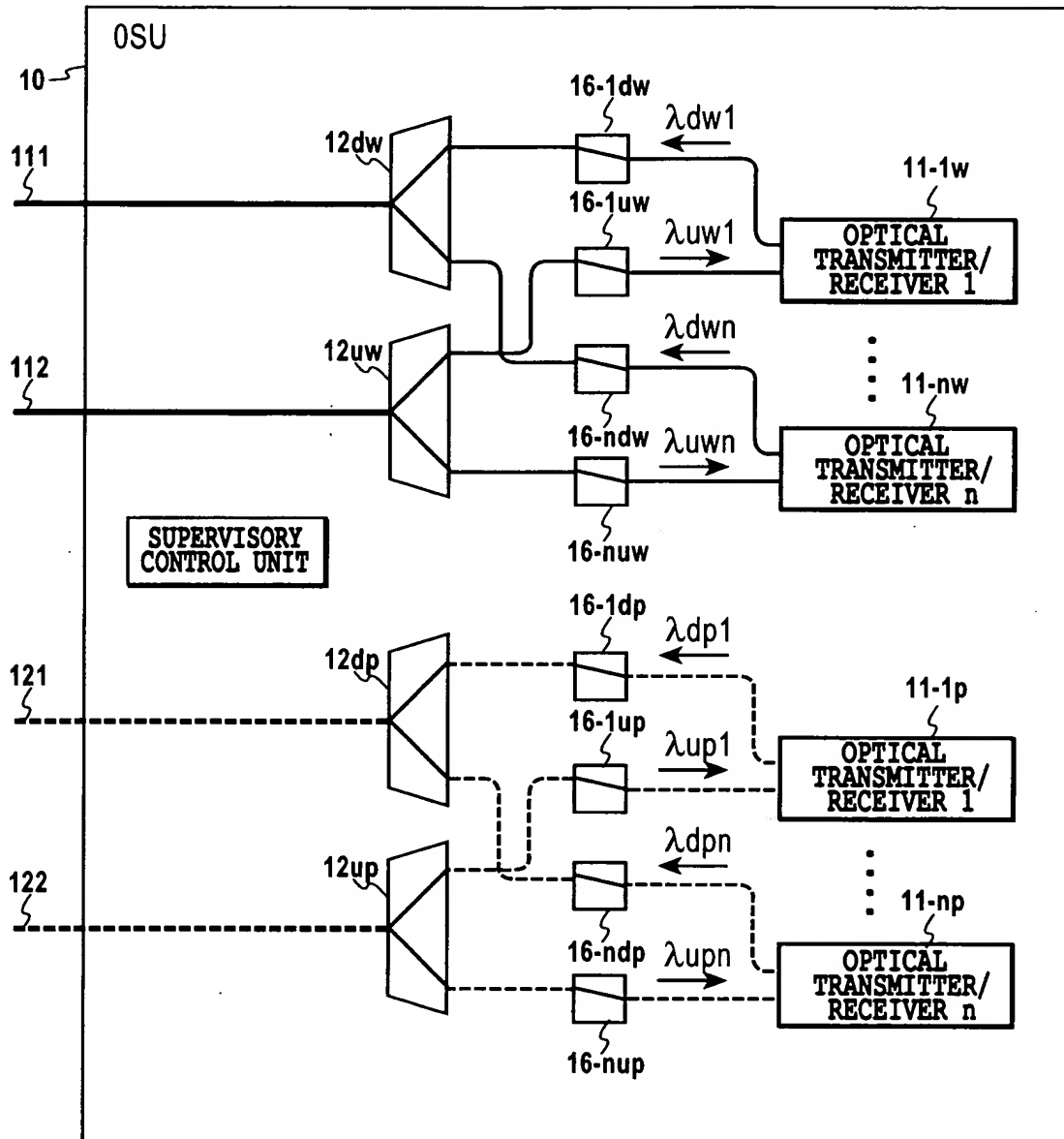


FIG.19

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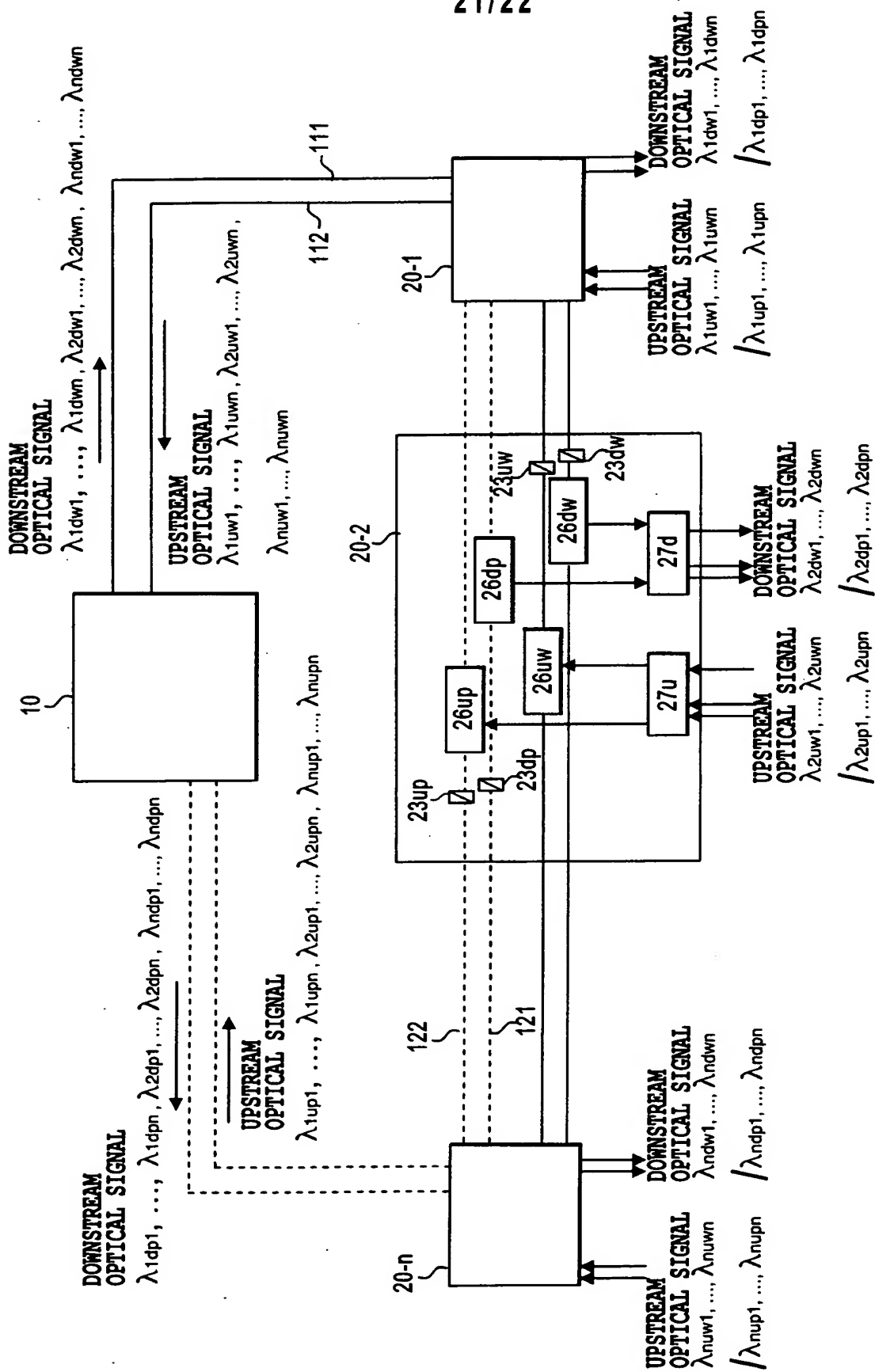


FIG. 21

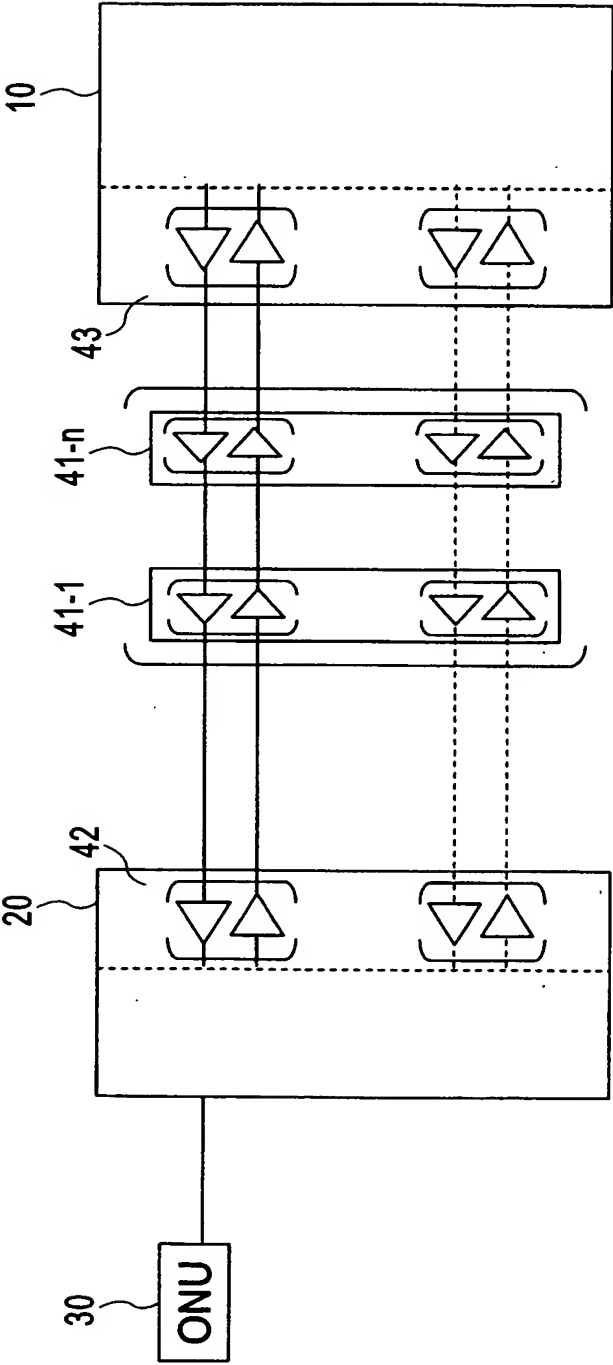


FIG.22